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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,900	04/11/2005	Warren Thomas Johnson	2002P87057WOUS	9243

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SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
170 WOOD AVENUE SOUTH
ISELIN, NJ 08830

EXAMINER	
ANDERSON, DENISE R	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
07/28/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,900	JOHNSON, WARREN THOMAS	
	Examiner	Art Unit	
	Denise R. Anderson	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-13 and 15-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-13 and 15-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Continued Examination Under 37 CFR 1.114

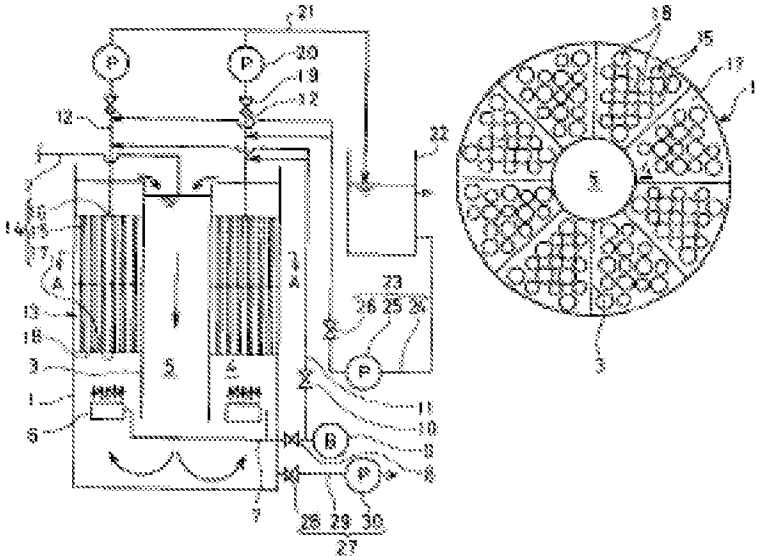
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 19, 2009 has been entered.

Claim Rejections - 35 USC § 103
Filtration Arrangement Recited in Claims 10-13, 15-21 and 35

3. Claims 10-13, 15-21 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horii (JP10076264A, Mar. 24, 1998 – esp@cenet Abstract, Patent Publication, Machine Translation), in view of Cote et al. (US 5,607,593, Mar. 4, 1997) for the tube, in further view of Ide (JP2277528, Nov. 14, 1990 – esp@cenet Abstract, Patent Publication, Translation) to teach that it is inherent that gas fed into the aeration hood will displace feed liquid and lower a level of feed liquid in the aeration hood when the open-ended tube is distinct from the side wall of the aeration hood.

4. Regarding independent claim 10 – In Figs. 1 and 2 shown below, Horii discloses a "Sewage Treatment Apparatus Using [an] Immersion Type Membrane Separator." Horii, Title.

Horii, Figs. 1 and 2:
Filtration arrangement with aeration hood to promote a circulatory flow.



In the above figures, Horii teaches a filtration arrangement (Fig. 1) with an aeration hood (Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) that has an upper wall (header 16) and a downwardly extending side wall (Figs. 1 and 2, bridgewalls 3) shrouding membrane modules (Figs. 1 and 2, membrane elements 15) that are vertically positioned within a feed tank (Figs. 1 and 2, immersion tub 1). The membrane modules are in the form of tubes and are downwardly extending from the upper wall of the aeration hood. Each membrane module's lower end is in fluid communication with the feed tank's interior. The aeration hood has at least one downwardly extending side wall below the open-ended tube. When arranged in this manner, Horii further teaches that the aeration hood serves to generate a "circulatory system in a tub . . . and consists of the upflow way 4 and the lower countercurrent way 5 . . . A form of the upflow way 4 and the lower countercurrent way 5 is not restricted to what was mentioned above . . . the sectional shape of each channel can consider various shape,

such as a cylindrical shape, a sector, and a rectangle." Horii, Translation, ¶ 11, lines 3-5 and 8-11.

5. Regarding dependent claims 11 and 16, Horii further discloses that a the aeration hood (Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) is formed by a side wall of the feed tank (Figs. 1 and 2 immersion tub 1) with the aeration hood's upper wall being sealingly attached to the feed tank [claim 11]. An aeration header (Fig. 1, diffuser 6), is located beneath the aeration hood [claim 16]. At least one sidewall of the aeration hood extends downward to at least the lower end of the tube [claim 17].

6. Horii discloses the claimed invention except for explicitly describing the membrane module structure. Specifically, Horii does not teach a membrane module mounted inside a tube [claim 13] having aeration openings [claim 10] at the top [claim 35] and the bottom [claim 12]. The aeration openings are in the form of slots [claim 15], specifically, open-ended slots [claim 19], at the tube's lower end [claim 18]. Cote et al. discloses all but one of these limitations in Figs. 9, 9A, and 9C shown below – in the context of an "Installation for Making Water Potable with Submerged Filtering Membranes." Cote et al., Title. The one limitation is claim 18 where Cote et al. discloses the open-ended slots at the top of the tube instead of at the bottom in Fig. 9C. It would have been obvious to one of ordinary skill in the art that time the invention was made to have the Horii open-ended slots at the bottom of the tube instead of the top since this is an example of combining prior art elements (open-ended slots with a tube) according to known methods (the open-ended slots provide liquid entrance to or exit from the tube) to yield predictable results (the solids in the liquid are filtered).

Cote et al., Figs. 9, 9A, and 9C:
Membrane modules in open-ended tube to promote circulatory flow.

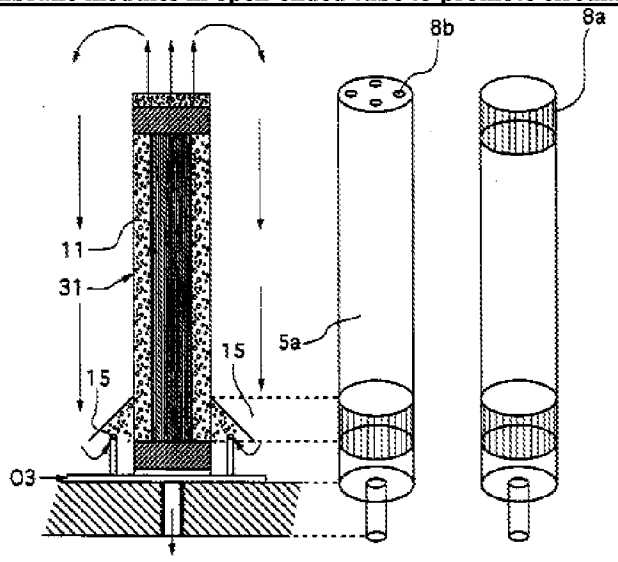


Fig. 9 Fig. 9A Fig. 9C

Cote et al. further discloses that this arrangement is used to promote circulatory flow within the tank. Specifically, Cote et al. teaches, "The ozone could thus be produced out of air (applicant's recited aeration generated by an aeration header) or oxygen. . . . [T]he ozone is thus used to serve both as a circulation fluid and an oxidizing fluid." Cote et al., col. 3, lines 10 and 27-28.

7. From the above Figs. 9, 9A, and 9C, Cote et al. discloses a membrane module mounted inside a tube (sheath 5a) [claim 13] having aeration opening (open-worked zones 8a or holes 8b) [claim 10] at the top [claim 35] and the bottom [claim 12]. The aeration openings are in the form of slots [claim 15], specifically open-ended slots (open-worked zone 8a shown at top) [claim 19] at the tube's upper end and lower end [claim 18]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the Horii membrane modules as taught by Cote et al., since Cote et al. shows in Fig. 9 and states at col. 3, lines 10 and 27-28, such a modification would promote circulatory flow within the tank.

8. Horii, in view of Cote et al., discloses or suggests the claimed invention except for explicitly teaching a tube distinct from the aeration hood side wall such that gas fed into the aeration hood will displace feed liquid and lower a level of feed liquid in the aeration hood. In Figs. 1-5, Ide discloses an aeration hood (protecting hood 4) and further teaches that it is inherent that gas fed into the aeration hood (Fig. 2) displaces feed liquid L and lowers the level L of the feed liquid (Fig. 3) in the aeration hood. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the Horii tubes distinct from the aeration hood side wall since it was known in the art that such an arrangement would inherently cause a gas fed into the aeration hood to displace feed liquid and lower the level of feed liquid in the aeration hood. See, for example, Figs. 1-5 of Ide.

9. Independent claim 20 and dependent claim 21 recite limitations already discussed above, substituting the term "sleeve" for "tube."

10. In summary, Horii, in view of Cote et al. for the tube, in further view of Ide to teach that it is inherent that gas fed into the aeration hood will displace feed liquid and lower a level of feed liquid in the aeration hood when the tube is distinct from the side wall of the aeration hood, as recited – discloses or suggests all limitations recited in claims 10-13, 15-21, and 35.

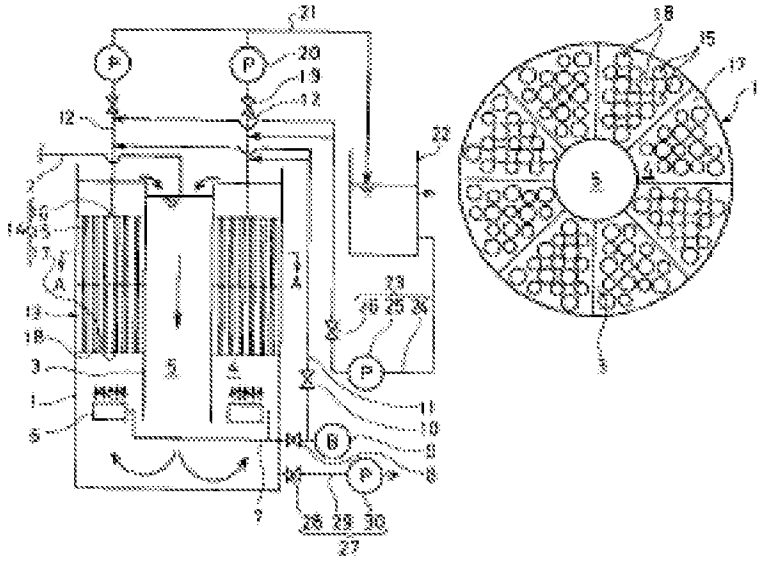
Claim Rejections - 35 USC § 103
Water Treatment System Recited in Claims 27-34

11. Claims 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horii (JP10076264A, Mar. 24, 1998 – esp@cenet Abstract, Patent Publication, Machine Translation), in view of Cote et al. (US 5,607,593, Mar. 4, 1997) for the tube.

12. The patentability analysis of the water treatment system is analogous to that of the filtration system above.

13. Regarding independent claim 27 – In Figs. 1 and 2 shown below, Horii discloses a "Sewage Treatment Apparatus Using [an] Immersion Type Membrane Separator." Horii, Title.

Horii, Figs. 1 and 2:
Filtration arrangement with aeration hood to promote a circulatory flow.



In the above figures, Horii teaches a water treatment system (Fig. 1) with an aeration hood (Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) that has an upper wall (Fig. 1, header 16) with an opening. The aeration hood is immersed within the water treatment system. Also immersed within the system are membrane modules (Figs. 1 and 2, membrane elements 15) in the form of tubes. As such, the tubular membrane modules are sealingly secured to the upper wall (Fig. 1, header 16) of the aeration hood (Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) as evidenced by the treated water pipeline 12 leading to treated water tub 22. The tubular membrane modules are in fluid communication with the water to be treated through the aeration hood's upper wall because Horii

further teaches that the aeration hood serves to generate a "circulatory system in a tub . . . and consists of the upflow way 4 and the lower countercurrent way 5 . . . A form of the upflow way 4 and the lower countercurrent way 5 is not restricted to what was mentioned above . . . the sectional shape of each channel can consider various shape, such as a cylindrical shape, a sector, and a rectangle." Horii, Translation, ¶ 11, lines 3-5 and 8-11.

14. Regarding dependents claims 28 and 31, Horii further discloses an aeration header (Fig. 1, diffuser 6) submerged below the aeration hood (Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) [claim 28] that partially fills the aeration hood with air [claim 31].

15. Horii discloses the claimed invention except for explicitly describing the recited membrane module structure. Specifically, Horii does not teach a membrane module mounted inside a tube [claim 27] with at least one aeration inlet opening in the tube wall [claim 29] at the bottom [claim 34]. As such, both the tube and the membrane module are in fluid communication with the water to be treated within the hood [claims 30 and 33] and the membrane module is in fluid communication with the air within the hood [claim 32]. Cote et al. discloses these limitations in Figs. 9, 9A, and 9C shown below – in the context of an "Installation for Making Water Potable with Submerged Filtering Membranes." Cote et al., Title.

Cote et al., Figs. 9, 9A, and 9C:
Membrane modules in open-ended tube to promote circulatory flow.

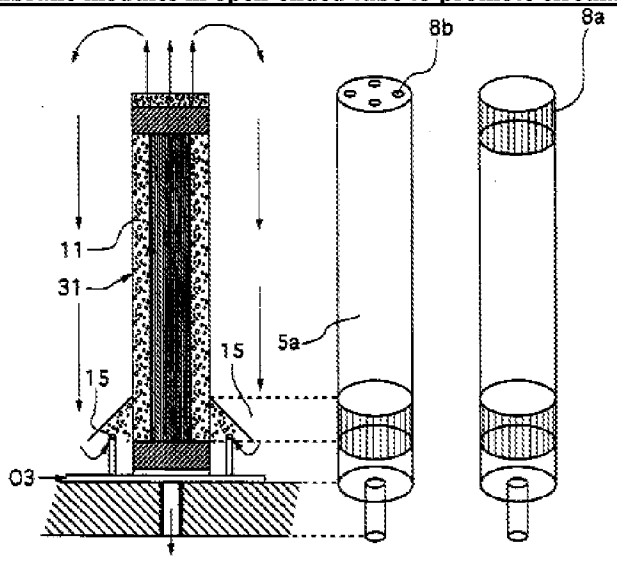


Fig. 9 Fig. 9A Fig. 9C

Cote et al. further discloses that this arrangement is used to promote circulatory flow within the tank. Specifically, Cote et al. teaches, "The ozone could thus be produced out of air (applicant's recited aeration generated by an aeration header) or oxygen. . . . [T]he ozone is thus used to serve both as a circulation fluid and an oxidizing fluid." Cote et al., col. 3, lines 10 and 27-28.

16. From the above Figs. 9, 9A, and 9C, Cote et al. discloses a membrane module mounted inside a tube (sheath 5a) [claim 27] with at least one aeration inlet opening (open-worked zones 8a and holes 8b) in the tube wall [claim 29] at the bottom [claim 34]. As such, both the tube (Cote et al., Figs. 9, 9A, and 9C, sheath 5a) and the membrane module (Horii, Figs. 1 and 2, membrane elements 15; Cote et al., Fig. 9, membranes in sheath 5a) are in fluid communication with the water to be treated within the aeration hood (Horii, Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) [claims 30 and 33] – and the membrane module (Horii, Figs. 1 and 2, membrane elements 15; Cote et al., Fig. 9, membranes

in sheath 5a) is in fluid communication with the air within the aeration hood (Horii, Figs. 1 and 2, header 16 with bridgewalls 3 and portions of immersion tub 1's side wall) [claim 32].

17. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the Horii membrane modules as taught by Cote et al., since Cote et al. shows in Fig. 9 and states at col. 3, lines 10 and 27-28, such a modification would promote circulatory flow within the tank.

18. In summary, Horii, in view of Cote et al. for the tube, discloses or suggests all limitations recited in claims 27-34.

Claim Rejections - 35 USC § 103
Method of Cleaning a Membrane Module Recited in Claims 22-26 and 36

19. Claims 22-26 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horii (JP10076264A, Mar. 24, 1998 – esp@cenet Abstract, Patent Publication, Machine Translation), in view of Cote et al. (US 5,607,593, Mar. 4, 1997) for the tube, in further view of Ide (JP2277528, Nov. 14, 1990 – esp@cenet Abstract, Patent Publication, Translation) for teaching that it is inherent that gas fed into the aeration hood will displace feed liquid and lower a level of feed liquid in the aeration hood when the open-ended tube is distinct from the side wall of the aeration hood.

20. The claimed method recites use of the apparatus recited in claims 10-27 and 35. As such, the apparatus provided is disclosed by Horii, in view of Cote, in further view of Ide.

21. Regarding claims 22 and 25 – In Fig. 1, Horii discloses an "Immersion Type Membrane Separator" that is immersed in the feed liquid as recited [claim 22]. Horii, Title. In that same figure, Horii further teaches that the membranes are aerated with blower 9 fed into diffusers 6

[claim 22] and that permeate is withdrawn from the membrane module (membrane elements 15) [claim 25] with treated water pump 15 and collected in treated water tub 22.

22. Regarding claims 22 and 26 – In Figs. 9, 9A, and 9C, Cote et al. discloses that the aeration gas passes through aeration inlet openings into the tube [claim 22] and that such an arrangement is used to promote circulatory flow within the tank. Specifically, Cote et al. teaches, "The ozone could thus be produced out of air (applicant's recited aeration generated by an aeration header) or oxygen. . . . [T]he ozone is thus used to serve both as a circulation fluid and an oxidizing fluid." Cote et al., col. 3, lines 10 and 27-28. Cote et al. further teaches, "[I]n addition to the chemical action of the ozone, there is the mechanical action of the bubbles which are advantageously used to unclog membranes." Cote et al., col. 4, lines 20-23. In other words, Cote et al. discloses scouring the membrane module with gas passed through the aeration inlet openings of the tube [claim 26]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have run the Horii method to include the step of passing gas through aeration inlet openings into the tube as taught by Cote et al., since Cote et al. shows in Fig. 9 and states at col. 3, lines 10 and 27-28, that such a modification would promote circulatory flow within the tank and, at col. 4, lines 20-23, that such a modification would "unclog membranes."

23. Regarding claims 22-24 and 36 – Horii, in view of Cote et al., discloses or suggests the claimed invention except for explicitly teaching that during aeration, liquid level in the aeration hood is lowered by displacing feed liquid within the aeration hood with a gas. In Figs. 1-5, Ide discloses an aeration hood (protecting hood 4) and further teaches that it is inherent that gas fed into the aeration hood (Fig. 2) displaces feed liquid L and lowers the level L of the feed liquid

(Fig. 3) in the aeration hood. As such, the liquid seal is maintained at the lower end of the tube [claim 23] with the aeration inlet openings there [claim 24] but the liquid level is also below the aeration inlet openings located at the upper end of the tube [claim 36]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have run the Horii method and lowered the liquid level in the aeration hood by displacing feed liquid within the aeration hood with gas, as taught by Ide, since it was known in the art that such an arrangement would inherently cause a gas fed into the aeration hood to displace feed liquid and lower the level of feed liquid in the aeration hood. See, for example, Figs. 1-5 of Ide.

24. In summary, Horii, in view of Cote et al. for the tube, in further view of Ide to teach that it is inherent that gas fed into the aeration hood will displace feed liquid and lower a level of feed liquid in the aeration hood when the tube is distinct from the side wall of the aeration hood, as recited – discloses or suggests all limitations recited in claims 22-26 and 36.

Response to Arguments

25. All but one of applicant's arguments with respect to claims 10, 20, 22, and 27 have been considered but are moot in view of the new ground(s) of rejection.

26. The one remaining argument concerns the Ide reference used to teach that gas fed into the aeration hood would inherently displace feed liquid and lower the level of feed liquid in the aeration hood. Applicant argues, "Drum 6 of Ide cannot be an aeration hood sidewall as claimed in any of independent claims 10, 20, 22, or 27 because it is not 'positioned within a feed tank' as recited in independent claims 10 and 22, immersed in feed liquid, as recited in independent claim

22, or 'submerged in water to be treated' as recited in independent claim 27." Applicant's Remarks, p. 10, line 27 to p. 11, line 2.

27. The examiner's response is that applicant is correct. The enclosed protecting tube 4, not drum 6, is analogous to the recited aeration hood when using Ide as an example of knowledge in the art. The above patentability analysis now reflects this.

Conclusion

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise R. Anderson whose telephone number is (571)270-3166. The examiner can normally be reached on Monday through Thursday, from 8:00 am to 6:00 pm.

29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

30. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DUANE SMITH/

Supervisory Patent Examiner, Art Unit 1797

/DRA/